WEST Search History

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DATE: Monday, February 07, 2005

Hide?	Set Name	Query	Hit Count
	DB=PGPB,USPT; PLUR=YES; OP=OR		
☐	L17	(inlet or outlet) and l6	1
☐	L16	inlet or outlet and l6	468833
☐	L15	TGGE and 20050014163.pn.	1
☐	L14	20050014163.pn.	1
☐	L13	((thermic or thermal or thermically or thermally) near5 gradient) same (DNA or protein)	367
☐	L12	((thermic or thermal or thermically or thermally) near5 gradient) and (DNA or protein)	1040
☐	L11	(thermic or thermal or thermically or thermally) near5 gradient	12998
☐	L10	(thermic or thermal) near5 gradient	12789
☐	L9	therm$ near5 gradient	13836
☐	L8	l5 and l7	1
☐	L7	target same protein and l6	1
☐	L6	20030077599.pn.	1
☐	L5	(thermophoresis or thermophoretic) same protein	1
☐	L4	(thermophoresis or thermophoretic) same protein	1
☐	L3	(thermophoresis or thermophoretic) and protein	17
☐	L2	(thermophoresis or thermophoretic) AND DNA	6
☐	L1	(thermophoresis or thermophoretic) same DNA	2

END OF SEARCH HISTORY

WEST Search History

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DATE: Monday, February 07, 2005

Hide?	Set Name	Query	Hit Count
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☐	L5	DNA and l3	1
☐	L4	l1 and L3	0
☐	L3	sogard-m$.in.	39
☐	L2	((thermic or thermal or thermically or thermally) near5 gradient) same (DNA or protein) same (array or microarray)	8
☐	L1	((thermic or thermal or thermically or thermally) near5 gradient) same (DNA or protein)	367

END OF SEARCH HISTORY

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NEWS	8	DEC 15	MEDLINE update schedule for December 2004
NEWS	9	DEC 17	ELCOM reloaded; updating to resume; current-awareness alerts (SDIs) affected
NEWS	10	DEC 17	COMPUAB reloaded; updating to resume; current-awareness alerts (SDIs) affected
NEWS	11	DEC 17	SOLIDSTATE reloaded; updating to resume; current-awareness alerts (SDIs) affected
NEWS	12	DEC 17	CERAB reloaded; updating to resume; current-awareness alerts (SDIs) affected
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NEWS	14	DEC 30	EPFULL: New patent full text database to be available on STN
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NEWS	16	JAN 03	No connect-hour charges in EPFULL during January and February 2005
NEWS	17	JAN 26	CA/CAPLUS - Expanded patent coverage to include the Russian Agency for Patents and Trademarks (ROSPATENT)

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                                                       ENTRY    SESSION
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=> e sogard m/au
MISSING TERM FOR FIELD QUALIFICATION BEFORE '/AU'
The search profile entered contains a field qualifier, e.g., '/AU',
with no term preceding it.

=> e sogard m/au
E1            1     SOGARD J/AU
E2            1     SOGARD JORGENSEN R/AU
E3           28 --> SOGARD M/AU
E4           41     SOGARD M R/AU
E5            8     SOGARD MICHAEL/AU
E6           12     SOGARD MICHAEL R/AU
E7            4     SOGARD P/AU
E8            2     SOGARD S/AU
E9           17     SOGARD S M/AU
E10          22     SOGARD SUSAN M/AU
E11           2     SOGARI F/AU
E12           1     SOGARI FRANCESCO/AU

=> e3-e6
L1           87 ("SOGARD M"/AU OR "SOGARD M R"/AU OR "SOGARD MICHAEL"/AU OR
                "SOGARD MICHAEL R"/AU)

=> l1 and ?therm?
L2           11 L1 AND ?THERM?

=> dup rem l2
PROCESSING COMPLETED FOR L2
L3            8 DUP REM L2 (3 DUPLICATES REMOVED)

=> l3 and DNA
L4            1 L3 AND DNA
```

=> d ibib abs 14

L4 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:319338 CAPLUS
DOCUMENT NUMBER: 138:298809
TITLE: Methods and devices for improving hybridization stringency of microarrays using **thermophoresis**
INVENTOR(S): **Sogard, Michael**
PATENT ASSIGNEE(S): Nikon Research Corporation of America, USA
SOURCE: U.S. Pat. Appl. Publ., 12 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003077599	A1	20030424	US 2001-38342	20011023
PRIORITY APPLN. INFO.:			US 2001-38342	20011023

AB An apparatus and method for performing hybridization or binding assays under **thermophoretic** conditions is provided. In particular, it relates to improving the hybridization stringency or decreasing the time required for hybridization in microarrays using **thermophoresis**. The apparatus for performing hybridization comprises a container connected to at least one temperature control block in a heat-conducting fashion, such that a temperature gradient is produced and contains inlet and outlet ports and optical access to the container via an aperture. Temperature gradients may be between 5-25 °C and the array may have a d. between 10,000 to 1 million probes per square cm.

=> l3 not l4
L5 7 L3 NOT L4

=> t ti l5 1-7

L5 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2005 ACS on STN
TI Wafer heating analysis for electron-beam projection lithography

L5 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2005 ACS on STN
TI Method and device for controlling **thermal** distortion in elements of a lithography system

L5 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2005 ACS on STN
TI Periodic clamping method and apparatus to reduce **thermal** stress in a wafer

L5 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2005 ACS on STN
TI Optical inspection of EPL stencil masks

L5 ANSWER 5 OF 7 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
TI Extreme ultraviolet apparatus has mirror including conduit provided inside channel for conducting cooling fluid, and gap is formed between conduit and channel such that low pressure is maintained in gap.

L5 ANSWER 6 OF 7 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
TI Electrostatic chuck has hollow area between multilayered membrane and support unit, and is connected to cooling gas supply source through gas piping holes on support unit.

L5 ANSWER 7 OF 7 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
TI X-Y stage for machine tool used in lithography for semiconductor wafer processing has spaced bearings extending from a bottom of the stage plate and each having an arcuate bottom in contact with the surface of the base plate.

=> (thermic or thermal or thermically or thermally) (s) gradient
L6 11990 (THERMIC OR THERMAL OR THERMICALLY OR THERMALLY) (S) GRADIENT

=> (DNA or protein) and (array or microarray)
4 FILES SEARCHED...
L7 90771 (DNA OR PROTEIN) AND (ARRAY OR MICROARRAY)

=> l6 and l7
L8 15 L6 AND L7

=> (thermophoresis or thermophoretic) and l7
L9 1 (THERMOPHORESIS OR THERMOPHORETIC) AND L7

=> l9 not l4
L10 0 L9 NOT L4

=> l8 not l4
L11 15 L8 NOT L4

=> t ti l8 1-15

L8 ANSWER 1 OF 15 MEDLINE on STN
TI **DNA** mutation detection in a polymer microfluidic network using temperature gradient gel electrophoresis.

L8 ANSWER 2 OF 15 MEDLINE on STN
TI Genotyping on a **thermal gradient DNA** chip.

L8 ANSWER 3 OF 15 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Methodologies for the characterization of microbes in industrial environments: A review.

L8 ANSWER 4 OF 15 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation. on STN
TI Genotyping on a **thermal gradient DNA** chip.

L8 ANSWER 5 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
TI Analysis of point mutations by **array** hybridization, **thermal gradient** denaturation and total internal reflection fluorometry

L8 ANSWER 6 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
TI **DNA** Mutation Detection in a Polymer Microfluidic Network Using Temperature Gradient Gel Electrophoresis

L8 ANSWER 7 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
TI Genotyping on a **thermal gradient DNA** chip

L8 ANSWER 8 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
TI Surface modification and hybridization on a **thermal gradient DNA** chip

L8 ANSWER 9 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
TI Apparatus for generating a temperature gradient and methods for using the

gradient to characterize molecular interactions

L8 ANSWER 10 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
TI A device for detecting specific hybridization in microarrays using temperature gradients and imaging of hybridizations labeled with a reporter dye

L8 ANSWER 11 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
TI **Thermal gradient DNA** chip

L8 ANSWER 12 OF 15 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN
TI **DNA** Mutation Detection in a Polymer Microfluidic Network Using Temperature Gradient Gel Electrophoresis.

L8 ANSWER 13 OF 15 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN
TI Genotyping on a **thermal gradient DNA** chip.

L8 ANSWER 14 OF 15 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN
TI Determination of melting temperature for variant detection using dHPLC: A comparison between an empirical approach and **DNA** melting prediction software.

L8 ANSWER 15 OF 15 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
TI Gradient microfluidic device, for providing linear temperature gradient to substrate, comprises substrate with architecture for parallel chemical or biochemical processing, and first and second temperature elements.

=> d ibib abs 18 1,2,5,8-11,14,15

L8 ANSWER 1 OF 15 MEDLINE on STN
ACCESSION NUMBER: 2004094095 MEDLINE
DOCUMENT NUMBER: PubMed ID: 14961715
TITLE: **DNA** mutation detection in a polymer microfluidic network using temperature gradient gel electrophoresis.
AUTHOR: Buch Jesse S; Kimball Christopher; Rosenberger Frederick; Highsmith W Edward Jr; DeVoe Don L; Lee Cheng S
CORPORATE SOURCE: Department of Chemistry and Biochemistry, University of Maryland, College Park, MD 20742, USA.
CONTRACT NUMBER: CA 092819 (NCI)
SOURCE: Analytical chemistry, (2004 Feb 15) 76 (4) 874-81. Journal code: 0370536. ISSN: 0003-2700.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200408
ENTRY DATE: Entered STN: 20040302
Last Updated on STN: 20040806
Entered Medline: 20040805

AB A miniaturized system for **DNA** mutation analysis, utilizing temperature gradient gel electrophoresis (TGGE) in a polycarbonate (PC) microfluidic device, is reported. TGGE reveals the presence of sequence heterogeneity in a given heteroduplex sample by introducing a **thermal** denaturing **gradient** that results in differences between the average electrophoretic mobilities of **DNA** sequence variants. Bulk heater assemblies are designed and employed to externally generate temperature gradients in spatial and temporal formats along the separation channels. TGGE analyses of model mutant **DNA**

fragments, each containing a single base substitution, are achieved using both single- and 10-channel parallel measurements in a microfluidic platform. Additionally, a comprehensive polymer microfluidic device containing an integrated microheater and sensor **array** is developed and demonstrated for performing spatial TGGE for **DNA** mutation analysis. The device consists of two PC modular substrates mechanically bonded together. One substrate is embossed with microchannels, and the other contains a tapered microheater, lithographically patterned along with an **array** of temperature sensors. Compared with the external heating approaches, the integrated platform provides significant reduction in power requirement and **thermal** response time while establishing more accurate and highly effective control of the temperature **gradient** for achieving improved separation resolution.

L8 ANSWER 2 OF 15 MEDLINE on STN
ACCESSION NUMBER: 2003105480 MEDLINE
DOCUMENT NUMBER: PubMed ID: 12618377
TITLE: Genotyping on a **thermal gradient** **DNA** chip.
AUTHOR: Kajiyama Tomoharu; Miyahara Yuji; Kricka Larry J; Wilding Peter; Graves David J; Surrey Saul; Fortina Paolo
CORPORATE SOURCE: Department of Pediatrics, The Children's Hospital of Philadelphia and University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania 19104, USA.
CONTRACT NUMBER: P60-HL38632 (NHLBI)
R21CA83220-01A1 (NCI)
SOURCE: Genome research, (2003 Mar) 13 (3) 467-75.
Journal code: 9518021. ISSN: 1088-9051.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200304
ENTRY DATE: Entered STN: 20030306
Last Updated on STN: 20030416
Entered Medline: 20030411

AB Silicon-based chips with discrete, independently temperature-controlled islands have been developed for use in **DNA microarray** hybridization studies. Each island, containing a heater made of a diffusion layer and a temperature sensor based on a p-n junction, is created on a silicon dioxide/nitride surface by anisotropic etching. Different reactive groups are subsequently added to the surface of the islands, and allele-specific oligonucleotide probes are attached to discrete spots on the chip. Hybridization is performed with Cy5-tagged single-stranded targets derived by PCR from genomic **DNA**. Results are assessed by measuring fluorescence of bound dye-tagged targets after hybridization and washing. Temperatures at each island can be set at different values to obtain optimal distinction between perfect matches and mismatches. This approach facilitates definition of optimal temperatures for probe/target annealing and for distinction between perfectly matched versus mismatched solution-phase targets. The **thermal gradient DNA** chips were then tested for genotyping, and the results for four different loci in two genes are presented. Unambiguous typing was achieved for clinically relevant loci within the factor VII and hemochromatosis genes.

L8 ANSWER 5 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:756000 CAPLUS
DOCUMENT NUMBER: 141:237717
TITLE: Analysis of point mutations by **array** hybridization, **thermal gradient**

denaturation and total internal reflection fluorometry
PATENT ASSIGNEE(S): Klapproth, Holger, Germany
SOURCE: Ger. Offen., 7 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10309526	A1	20040916	DE 2003-10309526	20030304
PRIORITY APPLN. INFO.:			DE 2003-10309526	20030304

AB The invention describes a procedure for identifying point mutation using **DNA** microarrays and stimulation of total internal reflection fluorescence. Target nucleic acids and probes are hybridized at a permissive temperature and hybrids are eluted by increasing the stringency of hybridization by increasing the temperature Denaturation can be detected by total internal reflection fluorometry and m.p. curves are generated and the difference of the m.p. curves between the probe for the wild type **DNA** and the probe for the appropriate mutant **DNA** is generated. The shape of the melting curve allows clear identification of a homozygotes and heterozygotes.

L8 ANSWER 8 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:350363 CAPLUS
DOCUMENT NUMBER: 138:85835
TITLE: Surface modification and hybridization on a **thermal gradient DNA** chip
AUTHOR(S): Kajiyama, T.; Sakazume, T.; Miyahara, Y.; Surrey, S.; Graves, D. J.; Wilding, P.; Kricka, L. J.; Fortina, P.
CORPORATE SOURCE: Dept Pediatrics, The Children's Hospital of Philadelphia, Philadelphia, PA, 19104, USA
SOURCE: Micro Total Analysis Systems 2001, Proceedings μTAS 2001 Symposium, 5th, Monterey, CA, United States, Oct. 21-25, 2001 (2001), 585-586. Editor(s): Ramsey, J. Michael; Berg, Albert van den. Kluwer Academic Publishers: Dordrecht, Neth.
CODEN: 69COT6; ISBN: 1-4020-0148-7
DOCUMENT TYPE: Conference
LANGUAGE: English
AB We developed a method for attaching oligonucleotide (ON) probes to the silicon nitride surface of a **thermal gradient DNA** chip. We verified that aminosilane and polylysine were effective in generating reactive surface amino groups, and phenyl-diisothiocyanate (PDC) was effective to link amino modified ON to the chip surface. We used the chip to detect single-base changes by allele-specific ON hybridization.
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 9 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:107220 CAPLUS
DOCUMENT NUMBER: 136:147447
TITLE: Apparatus for generating a temperature gradient and methods for using the gradient to characterize molecular interactions
INVENTOR(S): Blumenfeld, Martin; Fisher, Mark; Williamson, Fred; Cibuzar, Gregory T.; Van Ness, Brian G.
PATENT ASSIGNEE(S): Regents of the University of Minnesota, USA
SOURCE: PCT Int. Appl., 90 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002009868	A2	20020207	WO 2001-US23831	20010730
WO 2002009868	A3	20020627		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 6544477	B1	20030408	US 2000-630172	20000801
US 2002015995	A1	20020207	US 2001-853806	20010511
US 6733729	B2	20040511		
US 2002015996	A1	20020207	US 2001-853964	20010511
US 6610470	B2	20030826		
CA 2417889	AA	20020207	CA 2001-2417889	20010730
EP 1307293	A2	20030507	EP 2001-961792	20010730
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004505255	T2	20040219	JP 2002-515410	20010730
PRIORITY APPLN. INFO.:			US 2000-630172 A	20000801
			WO 2001-US23831 W	20010730

AB A novel apparatus for generating temperature gradients is described. The apparatus includes a semiconductive wafer and elec. connectors attached to, preferably, one of the edges of the wafer. Methods for transferring the temperature gradients to strata are described. The temperature gradients on the strata can be used for analyses of mols., particularly biol. macromols. The present invention also includes improved methods for determining the thermal stability of binding complexes.

L8 ANSWER 10 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:676314 CAPLUS
DOCUMENT NUMBER: 135:222342
TITLE: A device for detecting specific hybridization in microarrays using temperature gradients and imaging of hybridizations labeled with a reporter dye
INVENTOR(S): Nakao, Motonao; Yamamoto, Kenji; Yoshii, Junji; Mizuno, Katsuya
PATENT ASSIGNEE(S): Hitachi Software Engineering Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1132485	A2	20010912	EP 2001-105870	20010309
EP 1132485	A3	20031008		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

IE, SI, LT, LV, FI, RO

JP 2001255328	A2	20010921	JP 2000-67684	20000310
US 2002022226	A1	20020221	US 2001-802804	20010309
US 6589740	B2	20030708		

PRIORITY APPLN. INFO.: JP 2000-67684 A 20000310

AB The present invention detects and quantitates only specific hybridization bindings. A biochip spotted with a plurality of probe biopolymers is accommodated in a container into which a washing solution is supplied from a liquid supplying unit. A heating block controls the temperature of the biochip according to a predetd. time pattern. An imaging device captures an image of the spot surface of the biochip at predetd. intervals. The plurality of images picked up with the pickup unit are stored in a computer. By analyzing the images for individual spots, hybridization can be detected with high reliability for every spot without being influenced by optimal hybridization temps. which differ depending upon the types of probes on the spots.

L8 ANSWER 11 OF 15 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2000:670656 CAPLUS
DOCUMENT NUMBER: 134:361916
TITLE: **Thermal gradient DNA** chip
AUTHOR(S): Kajiyama, Tomoharu; Murakawa, Katsuji; Miyahara, Yuji
CORPORATE SOURCE: Life Science Group, Hitachi, Ltd., Tokyo, 185-8601, Japan
SOURCE: Micro Total Analysis Systems 2000, Proceedings of the μTAS Symposium, 4th, Enschede, Netherlands, May 14-18, 2000 (2000), 505-508. Editor(s): Van den Berg, Albert; Olthuis, W.; Bergveld, Piet. Kluwer Academic Publishers: Dordrecht, Neth.
CODEN: 69AJPB
DOCUMENT TYPE: Conference
LANGUAGE: English

AB We have developed a new **DNA** chip that allows the temperature of each **DNA** probe to be controlled independently and set to an optimum value. By simulation, a **thermal gradient** is found to be established in the SiO2 membrane on the chip. We fabricated the prototype chip and evaluated the fundamental characteristics of the chip. The temperature-sensing characteristic is almost linear, so the Si-islands' temps. can be detected and controlled by using the simple function of the pn-junction's voltage. With the proposed structure, an Si-island can effectively be thermally isolated from the neighboring islands. Using this new **DNA** chip, we can arrange the appropriate **DNA** probes depending on the melting temperature and hybridization between a target **DNA** and carry it out in the optimum condition.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 14 OF 15 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2002414044 EMBASE
TITLE: Determination of melting temperature for variant detection using dHPLC: A comparison between an empirical approach and **DNA** melting prediction software.
AUTHOR: Rudolph J.G.; White S.; Sokolsky C.; Bozak D.; Mazzanti C.; Lipsky R.H.; Goldman D.
CORPORATE SOURCE: Dr. J.G. Rudolph, Transgenomic, Inc., 11 Firstfield Road, Gaithersburg, MD 20878, United States. jrudolph@transgenomic.com
SOURCE: Genetic Testing, (2002) 6/3 (169-176).
Refs: 23
ISSN: 1090-6576 CODEN: GETEF4

COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 022 Human Genetics
027 Biophysics, Bioengineering and Medical Instrumentation
029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB Detection of **DNA** sequence variants by the use of denaturing high-performance liquid chromatography (dHPLC) is a relatively new method (Underhill et al., 1997) and has distinct advantages over other methods such as single-strand conformation polymorphism (SSCP), direct sequencing, and **DNA** chip hybridization. The dHPLC-based single-nucleotide polymorphism (SNP) screening relies on different **DNA** thermodynamic properties between perfectly matched base pairs in homoduplex molecules and single base-pair mismatches in heteroduplex DNAs. Separation of the two forms of duplex DNAs by dHPLC is based on ionic forces between the negatively charged **DNA** and the hydrophobic stationary phase, which consists of C(18) chains on PS-DVB (polystyrene-divinylbenzene) beads coated with a positively charged ion-pairing agent (TEAA, triethylammonium acetate). Removal of the **DNA** from the TEAA-coated beads is dependent upon a mobile organic phase, in the form of a linear acetonitrile **gradient**. The major factor that influences the success of dHPLC to detect sequence variation is the **thermal** stability of the duplex **DNA**, which is determined by the melting temperature (TM(50)), where 50% of the **DNA** strand is single stranded and 50% is double stranded. The TM(50) predicts the best probability of detecting a single base-pair change based on the altered thermodynamics it imparts to the **DNA** duplex. Generally, there are two ways to determine this melting temperature, either empirically or with the aid of predictive **DNA** melting analysis software. Such programs include the DNAMelt program located on the Stanford University **DNA** Sequencing and Technology Center website, MeltCalc® (Schutz and vonAhsen 1999), and WAVEMAKER®, the proprietary melting analysis software provided with the Transgenomic WAVE® dHPLC system. The goal of the current study was to determine whether currently available predictive **DNA** melting programs could be used to increase efficiency and throughput of SNP detection. A wide range of amplicons, differing in both size and GC composition, were selected for analysis to simulate the broad spectrum of PCR products that may be encountered during a large-scale dHPLC screening project.

L8 ANSWER 15 OF 15 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2003-441334 [41] WPIDS
DOC. NO. CPI: C2003-116803
TITLE: Gradient microfluidic device, for providing linear temperature gradient to substrate, comprises substrate with architecture for parallel chemical or biochemical processing, and first and second temperature elements.
DERWENT CLASS: B04 J04
INVENTOR(S): CREMER, P S; MAO, H; YANG, T
PATENT ASSIGNEE(S): (CREM-I) CREMER P S; (MAOH-I) MAO H; (YANG-I) YANG T; (TEXA) UNIV TEXAS A & M SYSTEM
COUNTRY COUNT: 101
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2003037514	A2	20030508	(200341)*	EN	38

RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT
RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM
ZW

US 2004005720 A1 20040108 (200404)
AU 2002359329 A1 20030512 (200464)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2003037514	A2	WO 2002-US34754	20021030
US 2004005720	A1 Provisional	US 2001-339904P	20011030
		US 2002-285323	20021030
AU 2002359329	A1	AU 2002-359329	20021030

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2002359329	A1 Based on	WO 2003037514

PRIORITY APPLN. INFO: US 2001-339904P 20011030; US 2002-285323 20021030

AN 2003-441334 [41] WPIDS

AB WO2003037514 A UPAB: 20030630

NOVELTY - A **gradient** microfluidic device, for providing a temperature **gradient** to a substrate, comprises a substrate with an architecture for massively parallel chemical or biochemical processing; first and second temperature elements parallel to each other, in **thermal** contact with the substrate, and where the temperature **gradient** is linear.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method for simultaneously determining the effect of temperature and at least one other parameter on the crystallization of an analyte, by:

(1) providing a microfluidic device;

(2) varying the parameter as a function of position on the substrate (3); and

(3) providing the first temperature element (1) at a temperature that is different than that of the second temperature element (2), so that a linear temperature gradient (7) is formed between the two elements.

USE - For providing a linear temperature **gradient** to a substrate by **thermally** contacting the substrate with first and second temperature elements that are in parallel (claimed).

ADVANTAGE - The novel system allows thermal equilibrium to be reached very quickly, e.g. as fast as 107 deg. C/s. It affords a convenient, one-shot method of obtaining a melting curve for double stranded **DNA**.

DESCRIPTION OF DRAWING(S) - The figures show a temperature gradient microfluidic device, and geometry of the channels in the microfluidic device, as above.

First temperature element 1
Second temperature element 2
Substrate 3
Channels 4
Temperature gradient 7
Cover 8
Inlet 9
Outlet 10
Dwg.1/12

```
=> (DNA or protein) and perpendicular?
L12       5350 (DNA OR PROTEIN) AND PERPENDICULAR?

=> l6 and perpendicular
L13        261 L6 AND PERPENDICULAR

=> d his

     (FILE 'HOME' ENTERED AT 15:21:50 ON 07 FEB 2005)

     FILE 'MEDLINE, BIOSIS, CAPLUS, EMBASE, WPIDS' ENTERED AT 15:22:26 ON 07
     FEB 2005
                E SOGARD M/AU
L1            87 E3-E6
L2            11 L1 AND ?THERM?
L3             8 DUP REM L2 (3 DUPLICATES REMOVED)
L4             1 L3 AND DNA
L5             7 L3 NOT L4
L6         11990 (THERMIC OR THERMAL OR THERMICALLY OR THERMALLY) (S) GRADIENT
L7         90771 (DNA OR PROTEIN) AND (ARRAY OR MICROARRAY)
L8            15 L6 AND L7
L9             1 (THERMOPHORESIS OR THERMOPHORETIC) AND L7
L10            0 L9 NOT L4
L11           15 L8 NOT L4
L12         5350 (DNA OR PROTEIN) AND PERPENDICULAR?
L13          261 L6 AND PERPENDICULAR

=> (THERMIC OR THERMAL OR THERMICALLY OR THERMALLY) (S) GRADIENT (s)perpendicular?
L14         139 (THERMIC OR THERMAL OR THERMICALLY OR THERMALLY) (S) GRADIENT
                (S) PERPENDICULAR?

=> l14 and (DNA or PROTEIN)
L15          12 L14 AND (DNA OR PROTEIN)

=> dup rem l15
PROCESSING COMPLETED FOR L15
L16            8 DUP REM L15 (4 DUPLICATES REMOVED)

=> t ti l16 1-8

L16  ANSWER 1 OF 8  WPIDS  COPYRIGHT 2005 THE THOMSON CORP on STN
TI   Thermal gradient apparatus comprises semiconducting wafer, two electrical
     connectors adjacent to each other on the wafer, and power source connected
     to the wafer through the connectors.

L16  ANSWER 2 OF 8  WPIDS  COPYRIGHT 2005 THE THOMSON CORP on STN
TI   Thermal gradient apparatus used for analysis of biological macromolecules,
     comprises semiconducting wafer, two adjacent electrical connectors, and
     power source.

L16  ANSWER 3 OF 8  WPIDS  COPYRIGHT 2005 THE THOMSON CORP on STN
TI   Thermal gradient apparatus, useful for analysis of biological
     macromolecules, comprises semiconducting wafer, two adjacent electrical
     connectors and power source.

L16  ANSWER 4 OF 8  EMBASE  COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.
     on STN
TI   The relative stabilities of base pair stacking interactions and single
     mismatches in long RNA measured by temperature gradient gel
     electrophoresis.
```

L16 ANSWER 5 OF 8 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.
on STN
TI The thermal stability of **DNA** fragments with tandem mismatches at a d(CXYG)·d(CY'X'G) site.

L16 ANSWER 6 OF 8 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.
on STN
TI Influence of neighboring base pairs on the stability of single base bulges and base pairs in a **DNA** fragment.

L16 ANSWER 7 OF 8 MEDLINE on STN DUPLICATE 1
TI Influence of nearest neighbor sequence on the stability of base pair mismatches in long **DNA**; determination by temperature-gradient gel electrophoresis.

L16 ANSWER 8 OF 8 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
TI Producing suitable temperature gradient for gel layer - on thermally conductive plate with heated and cooled opposite edges, useful in bio-technological assays etc..

=> d ibib abs l16 1-8

L16 ANSWER 1 OF 8 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2002-339267 [37] WPIDS
CROSS REFERENCE: 2002-225941 [28]; 2002-328525 [36]; 2003-775976 [73]
DOC. NO. CPI: C2002-097355
TITLE: Thermal gradient apparatus comprises semiconducting wafer, two electrical connectors adjacent to each other on the wafer, and power source connected to the wafer through the connectors.
DERWENT CLASS: A89 B04 D16
INVENTOR(S): BLUMENFELD, M; CIBUZAR, G T; FISHER, M; VAN NESS, B G; WILLIAMSON, F
PATENT ASSIGNEE(S): (MINU) UNIV MINNESOTA
COUNTRY COUNT: 96
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2002009868	A2	20020207	(200237)*	EN	90
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW					
AU 2001083031	A	20020213	(200238)		
EP 1307293	A2	20030507	(200332)	EN	
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
JP 2004505255	W	20040219	(200414)		129

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2002009868	A2	WO 2001-US23831	20010730
AU 2001083031	A	AU 2001-83031	20010730
EP 1307293	A2	EP 2001-961792	20010730
		WO 2001-US23831	20010730
JP 2004505255	W	WO 2001-US23831	20010730

JP 2002-515410 20010730

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2001083031	A Based on	WO 2002009868
EP 1307293	A2 Based on	WO 2002009868
JP 2004505255	W Based on	WO 2002009868

PRIORITY APPLN. INFO: US 2000-630172 20000801
AN 2002-339267 [37] WPIDS
CR 2002-225941 [28]; 2002-328525 [36]; 2003-775976 [73]
AB WO 200209868 A UPAB: 20040226
NOVELTY - Thermal gradient apparatus comprises a semiconducting wafer (110), two electrical connectors (114a-b) adjacent to each other on the wafer, and a power source connected to the wafer through the connectors. Each connector is attached to the wafer at an attachment site with a gap disposed between the two attachment sites.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(A) a method of generating a temperature gradient, which comprises attaching two electrical connectors to a semiconducting wafer, and connecting a power source to the wafer through the connectors;

(B) a method of analyzing biological macromolecules or assessing binding complex interactions, which comprises establishing a temperature gradient on a semiconducting wafer having a stratum disposed upon it, where the stratum has at least one sample comprising biological macromolecules or comprising at least one member of a binding complex in thermal contact with the temperature gradient and the wafer has two connectors connected to opposite poles of an electrical power source; and evaluating the samples by measuring a property of the sample to determine thermal stability of complexes formed with the biological macromolecules in the samples or to determined thermal stability of the binding complex on the stratum; and

(C) a method of conducting nucleic acid hybridization, which comprises establishing a temperature gradient, and performing a hybridization protocol on the samples to determine temperature effect based on the gradient.

USE - The apparatus is used for generating a temperature gradient useful in molecular interactions, particularly for characterizing interactions involving biological macromolecules.

ADVANTAGE - The inventive apparatus provides a shallow linear temperature gradient. The temperature gradient produced can be transferred successively through the lucite base of the fluidic cell, a glass slide, an acrylamide gel and another glass slide, the fluid film covering the glass slide and the lucite lid of the fluidic cell.

DESCRIPTION OF DRAWING(S) - The figure is a top view of a thermal gradient apparatus.

Wafer 110

Electrical connectors 114a-b

Dwg.1/11

L16 ANSWER 2 OF 8 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2002-328525 [36] WPIDS
CROSS REFERENCE: 2002-225941 [28]; 2002-339267 [37]; 2003-775976 [73]
DOC. NO. NON-CPI: N2002-257793
DOC. NO. CPI: C2002-094840
TITLE: Thermal gradient apparatus used for analysis of biological macromolecules, comprises semiconducting wafer, two adjacent electrical connectors, and power source.
DERWENT CLASS: A89 B04 D16 S03

INVENTOR(S): BLUMENFELD, M; CIBUZAR, G T; FISHER, M; NESS, B G V; WILLIAMSON, F; VAN NESS, B G

PATENT ASSIGNEE(S): (BLUM-I) BLUMENFELD M; (CIBU-I) CIBUZAR G T; (FISH-I) FISHER M; (NESS-I) NESS B G V; (WILL-I) WILLIAMSON F; (MINU) UNIV MINNESOTA

COUNTRY COUNT: 1

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2002015996	A1	20020207	(200236)*		45
US 6610470	B2	20030826	(200357)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2002015996	A1 Div ex	US 2000-630172	20000801
		US 2001-853964	20010511
US 6610470	B2 Div ex	US 2000-630172	20000801
		US 2001-853964	20010511

PRIORITY APPLN. INFO: US 2000-630172 20000801; US 2001-853964 20010511

AN 2002-328525 [36] WPIDS

CR 2002-225941 [28]; 2002-339267 [37]; 2003-775976 [73]

AB US2002015996 A UPAB: 20031112

NOVELTY - A thermal gradient apparatus comprising a semiconducting wafer, two adjacent electrical connectors on the wafer, and a power source, where each of the connectors are attached to the wafer at an attachment site, a gap is disposed between the two attachment sites and a power source is connected to the wafer through the electrical connectors, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) generating a temperature gradient comprising the thermal gradient apparatus;

(2) analyzing biological macromolecules comprising establishing a temperature gradient on a semiconducting wafer having a stratum disposed on it, where the stratum has one or more samples comprising biological macromolecules in thermal contact with the temperature gradient and evaluating the samples to determine thermal stability of the complexes formed with the biological macromolecules in the samples, where the samples are evaluated by measuring a property of the sample;

(3) conducting nucleic acid hybridization comprising establishing a temperature gradient on a semiconducting wafer having a stratum disposed on it, where the stratum has one or more samples comprising nucleic acid molecules in thermal contact with the temperature gradient and performing a hybridization protocol on the samples to determine temperature effect based on the gradient; and

(4) assessing binding complex interactions comprising establishing a temperature gradient on a semiconducting wafer having a stratum disposed on it, where the stratum has one or more samples comprising members of binding complexes in thermal contact with the temperature gradient and evaluating the samples to determine thermal stability of the binding complex on the stratum.

USE - For use in generating temperature gradient useful for the analysis of molecules, preferably biological macromolecules.

ADVANTAGE - The inventive apparatus is able to generate stable temperature gradient.

DESCRIPTION OF DRAWING(S) - The figure is a schematic diagram of the thermal gradient apparatus.

Semiconducting wafer 110
Electrical connectors 114a, 114b
Electrical wires 116a, 116b
Electrical transformer 120
Power source 126
Temperature sensor 130
Gap 134
Temperature controller 136
Relay switch 140
Dwg.1/11

L16 ANSWER 3 OF 8 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN
ACCESSION NUMBER: 2002-225941 [28] WPIDS
CROSS REFERENCE: 2002-328525 [36]; 2002-339267 [37]; 2003-775976 [73]
DOC. NO. NON-CPI: N2002-173337
DOC. NO. CPI: C2002-068793
TITLE: Thermal gradient apparatus, useful for analysis of biological macromolecules, comprises semiconducting wafer, two adjacent electrical connectors and power source.
DERWENT CLASS: B04 D16 T01 U11
INVENTOR(S): BLUMENFELD, M; CIBUZAR, G T; FISHER, M; VAN NESS, B G; WILLIAMSON, F
PATENT ASSIGNEE(S): (BLUM-I) BLUMENFELD M; (CIBU-I) CIBUZAR G T; (FISH-I) FISHER M; (VNES-I) VAN NESS B G; (WILL-I) WILLIAMSON F; (MINU) UNIV MINNESOTA
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2002015995	A1	20020207	(200228)*		45
US 6733729	B2	20040511	(200431)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2002015995	A1 Div ex	US 2000-630172	20000801
		US 2001-853806	20010511
US 6733729	B2 Div ex	US 2000-630172	20000801
		US 2001-853806	20010511

FILING DETAILS:

PATENT NO	KIND	PATENT NO
US 6733729	B2 Div ex	US 6544477

PRIORITY APPLN. INFO: US 2000-630172 20000801; US 2001-853806 20010511
AN 2002-225941 [28] WPIDS
CR 2002-328525 [36]; 2002-339267 [37]; 2003-775976 [73]
AB US2002015995 A UPAB: 20040514
NOVELTY - A thermal gradient apparatus comprising a semiconducting wafer, two adjacent electrical connectors on the wafer, and a power source, where each of the connectors is attached to the wafer at an attachment site, a gap is disposed between the two attachment sites and the power source is connected to the wafer through the electrical connectors, is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(1) generating a temperature gradient;

(2) analyzing (M1) biological macromolecules comprising establishing a temperature gradient using the thermal gradient apparatus and evaluating the samples to determine thermal stability of complexes formed with the biological macromolecules in the samples, where the samples are evaluated by measuring a property of the sample;

(3) conducting nucleic acid hybridization comprising establishing a temperature gradient using the thermal gradient apparatus and performing a hybridization protocol on the sample to determine temperature effect based on the gradient; and

(4) assessing binding complex interactions comprising establishing a temperature gradient using the thermal gradient apparatus and evaluating the samples to determine thermal stability of the binding complex on the stratum.

USE - For use in generating temperature gradient useful for the analysis of molecules, preferably biological macromolecules.

ADVANTAGE - The inventive apparatus is able to generate stable temperature gradient.

DESCRIPTION OF DRAWING(S) - The figure is a schematic diagram of the thermal gradient apparatus.

Semiconducting wafer 110
Electrical connectors 114a, 114b
Electrical wires 116a, 116b
Electrical transformer 120
Power source 126
Temperature sensor 130
Gap 134
Temperature controller 136
Relay switch 140
Dwg.1/11

L16 ANSWER 4 OF 8 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 97384057 EMBASE
DOCUMENT NUMBER: 1997384057
TITLE: The relative stabilities of base pair stacking interactions and single mismatches in long RNA measured by temperature gradient gel electrophoresis.
AUTHOR: Zhu J.; Wartell R.M.
CORPORATE SOURCE: R.M. Wartell, School of Biology, Georgia Institute of Technology, Atlanta, GA 30332, United States
SOURCE: Biochemistry, (1997) 36/49 (15326-15335).
Refs: 29
ISSN: 0006-2960 CODEN: BICHAW
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB The **thermal** stability of RNA duplexes differing by a single base pair (bp) substitution or mismatch were investigated by temperature **gradient** gel electrophoresis (TGGE). All base pair substitutions and mismatches were examined at six sites, and limited changes were investigated at three other sites. **DNA** templates for in vitro transcription were generated by the polymerase chain reaction (PCR). Transcribed forward and reverse single stranded RNAs were annealed to form 345 bp dupex RNA. Solution melting curves of selected RNAs were in good agreement with the predicted three step transitions. Parallel TGGE was used to determine the relative stabilities of the RNAs, and **perpendicular** TGGE was employed to obtain mobility transitions and midpoint transition temperatures (T(μ)) of the RNAs' first melting domain. The gel solvent included formamide and urea. The T(μ) values of the first melting domain were influenced by the identity of the base pair

substitution or mismatch as well as by the site's neighboring base pairs. The difference in the transition temperatures ($\delta T(\mu)$) between pairs of RNA ranged from 0 to 5 °C. $\delta T\mu$ values were used to determine free energy differences ($\delta\Delta G$). For RNA pairs distinguished by a base pair substitution, the $\delta\Delta G$ values were closely correlated with free energy differences calculated from stacking free energies determined from melting studies in 1 M Na+ [Serra, M. J., and Turner, D. H. (1995) Methods Enzymol. 259, 242-261.] An algorithm was developed using the free energies of terminal mismatches [Serra, M. J., and Turner, D. H. (1995) Methods Enzymol. 259, 242-261] that provided very good agreement with experimental free energies for the single internal mismatches.

L16 ANSWER 5 OF 8 EMBASE
on STN

ACCESSION NUMBER: 96090680 EMBASE
DOCUMENT NUMBER: 1996090680
TITLE: The thermal stability of **DNA** fragments with tandem mismatches at a d(CXYG)·d(CY'X'G) site.
AUTHOR: Ke S.-H.; Wartell R.M.
CORPORATE SOURCE: School of Biology, Georgia Institute of Technology,Atlanta, GA 30332, United States
SOURCE: Nucleic Acids Research, (1996) 24/4 (707-712).
ISSN: 0305-1048 CODEN: NARHAD
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB Temperature-**Gradient** Gel Electrophoresis (TGGE) was employed to determine the **thermal** stabilities of 28 **DNA** fragments, 373 bp long, with two adjacent mismatched base pairs, and eight DNAs with Watson-Crick base pairs at the same positions. Heteroduplex DNAs containing two adjacent mismatches were formed by melting and reannealing pairs of homologous 373 bp **DNA** fragments differing by two adjacent base pairs. Product DNAs were separated based on their **thermal** stability by parallel and **perpendicular** TGGE. The polyacrylamide gel contained 3.36 M urea and 19.2% formamide to lower the **DNA** melting temperatures. The order of stability was determined in the sequence context d(CXYG)·d(CY'X'G) where X·X' and Y·Y' represent the mismatched or Watson-Crick base pairs. The identity of the mismatched bases and their stacking interactions influence **DNA** stability. Mobility transition melting temperatures (T(U)) of the DNAs with adjacent mismatches were 1.0-3.6°C (±0.2°C) lower than the homoduplex **DNA** with the d(CCAG)·d(CTGG) sequence. Two adjacent G·A pairs, d(CGAG)·d(CGAG), created a more stable **DNA** than DNAs with Watson-Crick A·T pairs at the same sites. The d(GA)·d(GA) sequence is estimated to be 0.4 (±30%) kcal/mol more stable in free energy than d(AA)·d(TT) base pairs. This result confirms the unusual stability of the d(GA)·d(GA) sequence previously observed in **DNA** oligomers. All other DNAs with adjacent mismatched base pairs were less stable than Watson-Crick homoduplex DNAs. Their relative stabilities followed an order expected from previous results on single mismatches. Two homoduplex DNAs with identical nearest neighbor sequences but different next-nearest neighbor sequences had a small but reproducible difference in T(U) value. This result indicates that sequence dependent next neighbor stacking interactions influence **DNA** stability.

L16 ANSWER 6 OF 8 EMBASE
on STN

ACCESSION NUMBER: 95120660 EMBASE

DOCUMENT NUMBER: 1995120660
TITLE: Influence of neighboring base pairs on the stability of single base bulges and base pairs in a **DNA** fragment.
AUTHOR: Ke S.-H.; Wartell R.M.
CORPORATE SOURCE: School of Biology, Georgia Institute of Technology,Atlanta, GA 30332, United States
SOURCE: Biochemistry, (1995) 34/14 (4593-4600).
ISSN: 0006-2960 CODEN: BICHAW
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB Temperature-**gradient** gel electrophoresis (TGGE) was used to determine the relative **thermal** stabilities of 32 **DNA** fragments that differ by a single unpaired base (base bulge) and 17 DNAs differing by a base pair. Homologous 373 and 372 bp **DNA** fragments differing by a single base pair substitution or deletion were employed. Heteroduplexes containing a single base bulge were formed by melting and reannealing pairs of 372 and 373 bp DNAs. Product DNAs were separated on the basis of their **thermal** stability by parallel and **perpendicular** TGGE. The order of stability was determined for all single unpaired bases in four different nearest neighbor environments: (GXT)·(AYC), (GXG)·(CYC), (CXA)·(TYG), and (TXT)·(AYA) with X = A, T, G, or C, and Y = no base, or visa versa. **DNA** fragments containing a base bulge were destabilized by 2-3.6 °C (±0.2 °C) with respect to homologous DNAs with complete Watson-Crick base pairing. Both the identity of the unpaired base and the sequence of the flanking base pairs influenced the degree of destabilization. The range of temperature shift correspond to estimated unfavorable free energies from 2.5 to 4.6 kcal/mol. Purine base bulges were generally not as destabilizing as pyrimidine base bulges. An unpaired base which was identical to one of its adjacent bases generally caused less destabilization than an unpaired base with an identity differing from its nearest neighbors. This implies that positional degeneracy of an unpaired base within a mn of two or more identical bases is an important factor effecting stability. The ability of TGGE to order the stabilities of **DNA** fragments differing by a single base pair was used to determine the relative stabilities of base pair stacking interactions. The results determined by TGGE were consistent with the relative stabilities determined from UV melting transitions.

L16 ANSWER 7 OF 8 MEDLINE on STN DUPLICATE 1
ACCESSION NUMBER: 94077716 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8255768
TITLE: Influence of nearest neighbor sequence on the stability of base pair mismatches in long **DNA**; determination by temperature-gradient gel electrophoresis.
AUTHOR: Ke S H; Wartell R M
CORPORATE SOURCE: School of Biology, Georgia Institute of Technology, Atlanta 30332.
CONTRACT NUMBER: GM38045 (NIGMS)
SOURCE: Nucleic acids research, (1993 Nov 11) 21 (22) 5137-43.
Journal code: 0411011. ISSN: 0305-1048.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199401
ENTRY DATE: Entered STN: 19940203
Last Updated on STN: 19940203

Entered Medline: 19940113

AB Temperature-gradient gel electrophoresis (TGGE) was employed to determine the thermal stabilities of 48 **DNA** fragments that differ by single base pair mismatches. The approach provides a rapid way for studying how specific base mismatches effect the stability of a long **DNA** fragment. Homologous 373 bp **DNA** fragments differing by single base pair substitutions in their first melting domain were employed. Heteroduplexes were formed by melting and reannealing pairs of DNAs, one of which was 32P-labeled on its 5'-end. Product DNAs were separated based on their **thermal** stability by parallel and **perpendicular** temperature-**gradient** gel electrophoresis. The order of stability was determined for all common base pairs and mismatched bases in four different nearest neighbor environments; d(GXT).d(AYC), d(GXG).d(CYC), d(CXA).d(TYG), and d(TXT).d(AYA) with X,Y = A, T, C, or G. **DNA** fragments containing a single mismatch were destabilized by 1 to 5 degrees C with respect to homologous DNAs with complete Watson-Crick base pairing. Both the bases at the mismatch site and neighboring stacking interactions influence the destabilization caused by a mismatch. G.T, G.G and G.A mismatches were always among the most stable mismatches for all nearest neighbor environments examined. Purine.purine mismatches were generally more stable than pyrimidine.pyrimidine mispairs. Our results are in very good agreement with data where available from solution studies of short **DNA** oligomers.

L16 ANSWER 8 OF 8 WPIDS COPYRIGHT 2005 THE THOMSON CORP on STN

ACCESSION NUMBER: 1988-001232 [01] WPIDS
DOC. NO. NON-CPI: N1988-001014
DOC. NO. CPI: C1988-000520
TITLE: Producing suitable temperature gradient for gel layer - on thermally conductive plate with heated and cooled opposite edges, useful in bio-technological assays etc..
DERWENT CLASS: B04 J04 S03
INVENTOR(S): RIESNER, D; ROSENBAUM, V
PATENT ASSIGNEE(S): (QIAG-N) QIAGEN GMBH; (DIAG-N) DIAGEN INST MOLEK; (DIAG-N) DIAGEN INST MOLEKULARBIOLOGISC
COUNTRY COUNT: 11
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
EP 251306	A	19880107	(198801)*	GE	9
R: CH DE FR GB LI LU NL SE					
DE 3622591	A	19880114	(198803)		
JP 63027744	A	19880205	(198811)		
US 5066377	A	19911119	(199149)		9
EP 251306	B1	19921021	(199243)	GE	9
R: BE CH FR GB LI LU NL SE					
JP 07054315	B2	19950607	(199527)		5
DE 3622591	C2	19981119	(199850)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 251306	A	EP 1987-109432	19870701
DE 3622591	A	DE 1986-3622591	19860704
JP 63027744	A	JP 1987-167673	19870703
US 5066377	A	US 1990-545111	19900629
EP 251306	B1	EP 1987-109432	19870701
JP 07054315	B2	JP 1987-167673	19870703
DE 3622591	C2	DE 1986-3622591	19860704

FILING DETAILS:

PATENT NO	KIND	PATENT NO
JP 07054315	B2 Based on	JP 63027744

PRIORITY APPLN. INFO: DE 1986-3622591 19860704
AN 1988-001232 [01] WPIDS
AB EP 251306 A UPAB: 19930923
A temperature **gradient** applicable to materials held in a separation medium layer, e.g. of gel, and with at least one component undergoing **thermal** conversion, is controllably and reproducibly produced in a **thermally** conductive layer support plate (1) whose one edge (2) contacts one or more adjustable heaters (4), while the opposite edge contacts cooling devices (5). Energy flow of heaters and coolers exceeds energy flow through the plate, which exceeds **perpendicular** energy flow through the supported separation medium. Both heating and cooling may derive from thermostatically controlled liquid baths. Alternative heaters include electrical resistance wires or Peltier elements.

Plate dimensions may match a commercially available electrophoresis unit.

USE/ADVANTAGE - Claimed for detection and separation of vivoids, vival nuclei acids, or satellite RNAs or for analysis of mutations in nucleic acids, proteins, or **protein**-nucleic acid complexes.

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ABEQ EP 251306 B UPAB: 19930923
A method for producing a controllable and reproducible temperature gradient in a two-dimensional separating medium for the separation of mixtures of substances, wherein the two-dimensional separating medium is located on a heat-conducting plate, characterized in that one single heat-conducting plate (1) is employed and the surface turned away from the heat-conductive plate (1) of the separating medium has been provided with a heat-insulating cover (10), wherein one edge of the plate is heated by means of one or more controllable heating devices (4) and the opposite edge of the plate (1) is cooled by means of one or more controllable cooling devices (5).

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ABEQ US 5066377 A UPAB: 19930923
Electrophoresis device comprises a sheet-shaped sepg. medium in which a linear controllable temp. gradient can be reproduced by a single heat conducting plate opposed to the first surface of the sepg. medium and a controllable heater for heating one edge of the plate. A cooler cools the opposite edge of the plate. An insulator is opposed to the other surface of the sepg. medium.

ADVANTAGE - Low cost device.

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(FILE 'HOME' ENTERED AT 15:21:50 ON 07 FEB 2005)

FILE 'MEDLINE, BIOSIS, CAPLUS, EMBASE, WPIDS' ENTERED AT 15:22:26 ON 07 FEB 2005

	E SOGARD M/AU	
L1	87	E3-E6
L2	11	L1 AND ?THERM?
L3	8	DUP REM L2 (3 DUPLICATES REMOVED)
L4	1	L3 AND DNA
L5	7	L3 NOT L4
L6	11990	(THERMIC OR THERMAL OR THERMICALLY OR THERMALLY) (S) GRADIENT
L7	90771	(DNA OR PROTEIN) AND (ARRAY OR MICROARRAY)

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L8            15 L6 AND L7
L9             1 (THERMOPHORESIS OR THERMOPHORETIC) AND L7
L10            0 L9 NOT L4
L11           15 L8 NOT L4
L12         5350 (DNA OR PROTEIN) AND PERPENDICULAR?
L13          261 L6 AND PERPENDICULAR
L14          139 (THERMIC OR THERMAL OR THERMICALLY OR THERMALLY) (S) GRADIENT (
L15           12 L14 AND (DNA OR PROTEIN)
L16            8 DUP REM L15 (4 DUPLICATES REMOVED)

=> logoff hold
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY     SESSION
FULL ESTIMATED COST                                  172.45      172.66

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                      ENTRY     SESSION
CA SUBSCRIBER PRICE                                   -4.38       -4.38

 SESSION WILL BE HELD FOR 60 MINUTES
STN INTERNATIONAL SESSION SUSPENDED AT 15:46:11 ON 07 FEB 2005
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